HURRICANE PREPAREDNESS
A GIS APPROACH

Bob Oblinsky, GISP
City of Suffolk, VA
GIS Manager

Agenda

- Assignment
- Background
- Overview of Analysis
- What’s Next
- Questions and Answers

The Full Spectrum of Incident Management

Pre-Incident

Incident

Post-Incident

Prevention

Preparedness

Response

Recovery

Mitigation

Assignment

- The City of Suffolk GIS Division is tasked with developing a tool that could be used to quickly and efficiently answer citizen questions regarding need for voluntary evacuation.
- The results of this analysis can be used by citizens and city leaders to support voluntary evacuation decisions prior to major storm events.
- The results shall be evaluated annually.

Background

- Wednesday, September 17, 2003 -EOC activation
  - GIS staff arrived early afternoon
  - Found call takers using ADC Map book to respond to citizen questions regarding voluntary evacuation (5 minutes per call)
  - Quickly developed list of streets that are impacted by Storm Surge Inundation Areas (> 1 hour)
  - Call taker response reduced to under 1 minute per call

Hot Wash Critique

- What Worked
  - List of Streets was valuable resource
  - Reduced call time / Increased response capacity
  - Eliminated call taker judgment calls
  - ***First use of GIS data in Emergency Operations***

- What Didn't Work
  - Just including street names was too general
  - Did not include address ranges
  - Did not include riverine flooding
  - Did not include overland flooding & ponding

Resulting Work Plan

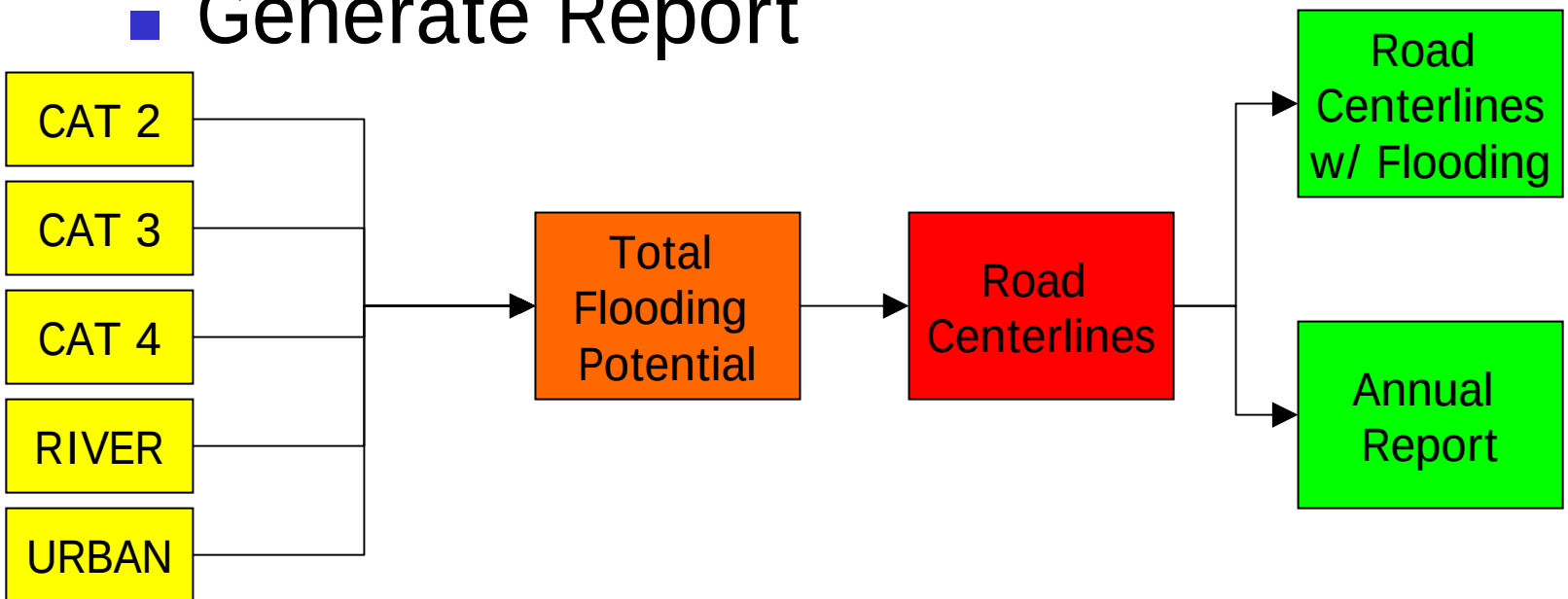
- From GIS Standard Operating Procedures for Emergency Operations ...
  - “Prior to the beginning of hurricane season every year, the City GIS team will perform the required analysis to generate a list of streets and address ranges that have the potential for flooding during a storm event. This analysis shall include Surge, Riverine and Overland Flooding. The results shall be presented in a manner that is easily understood and used.”

Analysis Inputs

- Road Centerlines w/ Address Ranges
- Storm Surge Inundation Areas
  - Category 1 - new in 2006 update
  - Category 2
  - Category 3
  - Category 4
- 100 Year Flood Areas
- Urban Flooding Areas

Analysis Process

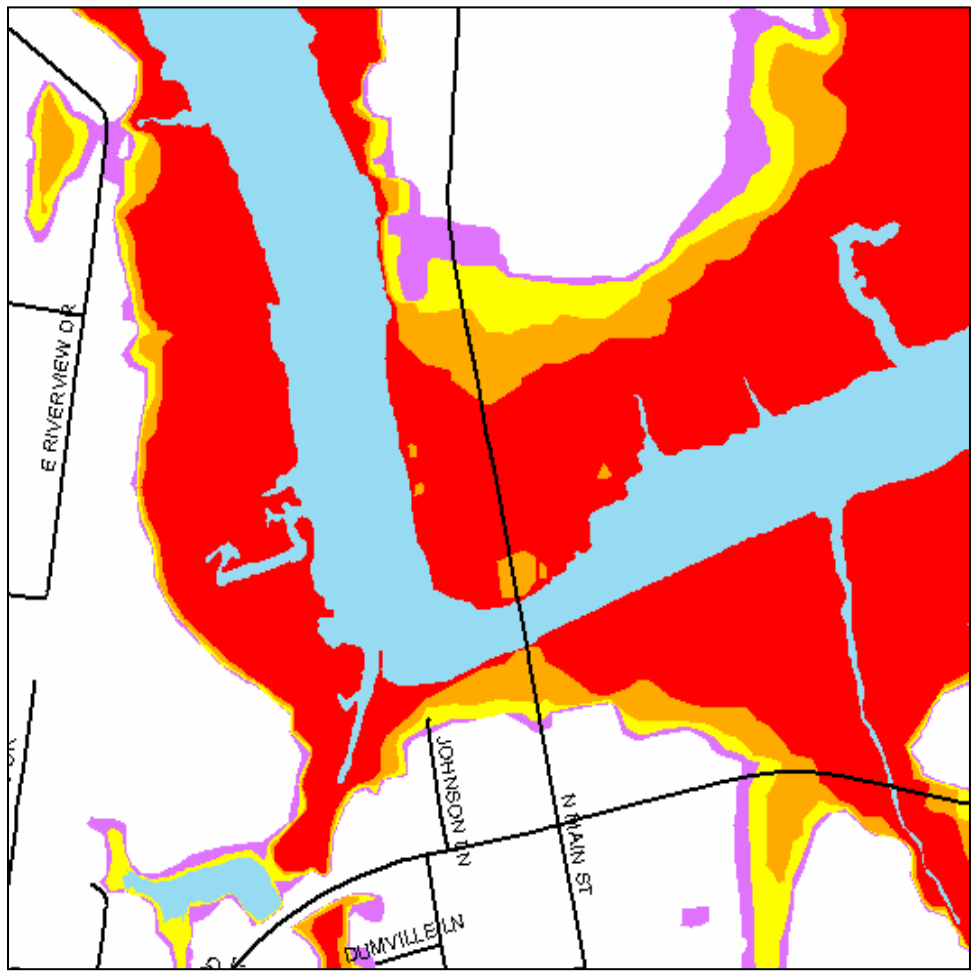
- Union all flood areas together into Total Flooding Potential layer
- Intersect Road Centerlines with TFP
- Generate Report



Analysis results
Storm Surge – N Main St.

SLOSH MODEL
Storm Surge Inundation Areas

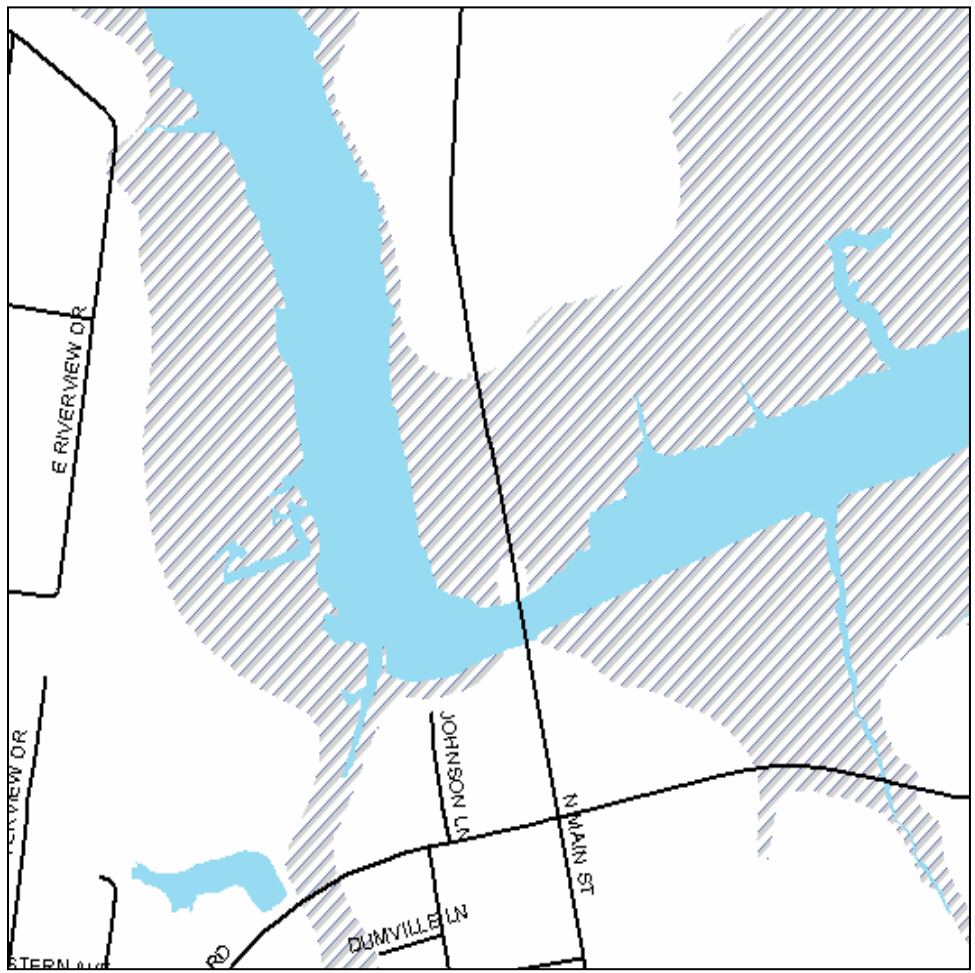
Category 1 – 4 Storms



Analysis Results
100 Year Flood – N Main St.

100 Year Flood Plain

FIRM Panels Rectified
To Planimetric Base Map



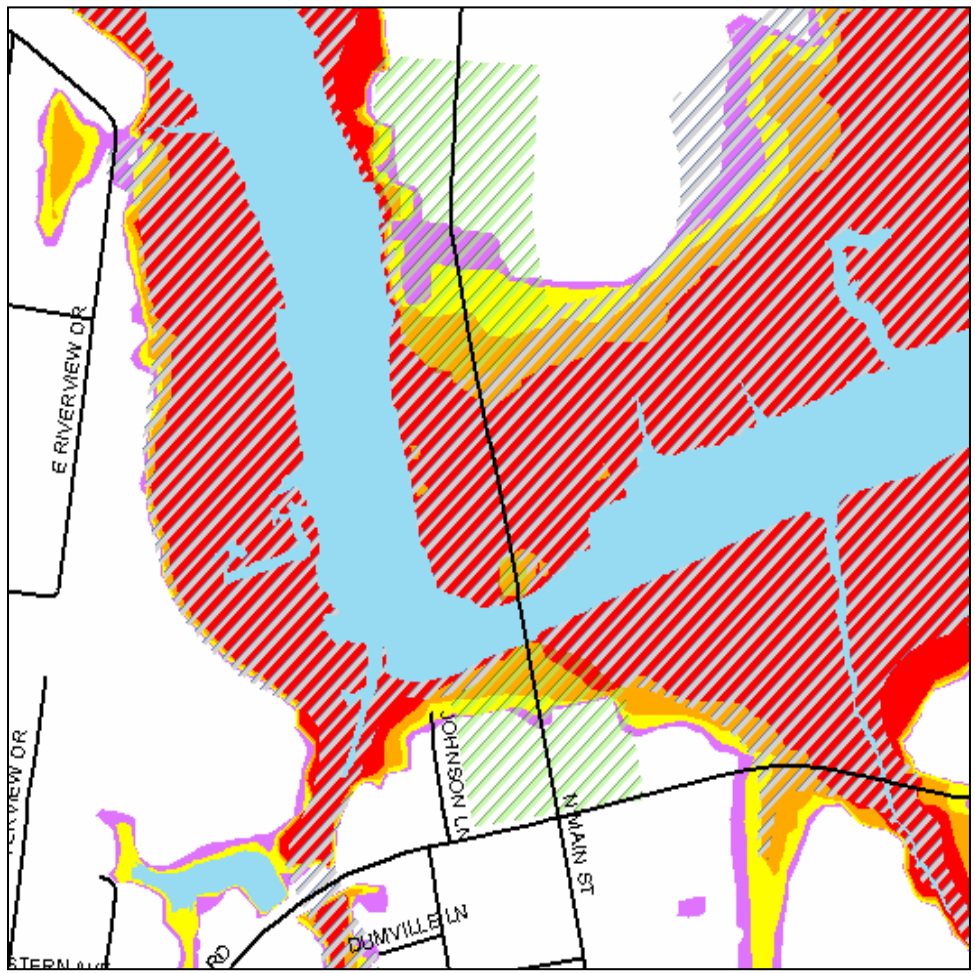
Analysis Results
Over Land Flood – N Main St.

Over Land Street Flooding

City of Suffolk Public Works
City of Suffolk Police
City of Suffolk Fire/Rescue

Analysis Results
Total Flood Potential – N Main St.

Feature Class resulting
From Union of all Flood
Polygons – Classified
By Flood Type



Analysis Results Report

M

MAGNOLIA DRIVE	4582 - 4599	GREEN ASH CT	to	CAMELLIA DR				Y			
MAGNOLIA DRIVE	4600 - 4632	CAMELLIA DR	to	VERNON DR				Y			
MAGNOLIA DRIVE	4700 - 4705	BROOKWOOD DR	to	BRADFORD DR					Y		
MAGNOLIA DRIVE	4706 - 4719	BRADFORD DR	to	OLD COLLEGE DR					Y		
N MAIN STREET	600 - 915	E CONSTANCE RD & W CONSTANCE RD	to	HOLLY LAWN PKWY	Y	Y	Y	Y	Y	Y	
MAINSAIL LANE	0 - 0	WINDWARD LN	to	PORTHOLE PL				Y			
MALLARD DRIVE	131 - 154	WOOD DUCK CT	to	END				Y			
MANNING ROAD	127 - 499	RONALD DR	to	SPRINGFIELD TER						Y	
MANNING ROAD	500 - 1540	MANNING BRIDGE RD	to	FARMVIEW LN					Y		

Report Highlights

- Street Names w/ Address Ranges
- Cross Streets identified
- Storm Intensity Segregated
  - Allows Emergency Manager and City Manager to be flexible with evacuation recommendations
- Alphabetical and Ascending Address Ranges
- Currently 54 Pages
- Available for view/download via City Emergency Management Web Site
- Distributed to all City department prior to season

Planned Enhancements

- Way to identify “Isolation Areas” because of high water
- Integrated alerts of new overland flooding areas via Public Works Asset Management System
  - Service Request – HIGH WATER
  - Work Order – INCLEMENT WEATHER / FLOODING
- Integrated alerts of new overland flooding areas via E-911 CAD activity

Questions and Contact Info

- Any questions?
- Bob Oblinsky, GISP
- 757-514-7696
- roblinsky@city.suffolk.va.us

- http://www.suffolk.va.us/em/floodinfo.html